

# HEAD MASSAGER

## BACKGROUND OF THE INVENTION

### 5 1. Technical Field

The present invention relates to a health massager device, and more particularly, to a health head massager.

### 2. Description of Related Art

10 In the prior art, a head massager includes a housing, a power source, drive mechanisms and soft massage heads. The power source is fixed in an inner side of the housing, the drive mechanisms are driven to rotate by the power source by means of gear sets, and then the soft massage heads are driven to horizontally rotate by the drive mechanisms. However, the massaging comfort degree of the head massager in the prior art is bad.

### 15 BRIEF SUMMARY OF THE INVENTION

The present invention provides a head massager with comfortable massage effect.

A head massager provided by the present invention comprises a housing, a power source, at least one driving wheel and at least one massage head assembly  
20 with soft massage heads, wherein the power source is fixed in an inner of the housing, the driving wheel corresponds to the massage head assembly respectively, the driving wheel is driven to rotate around a first rotation axis by the power source, the massage head assembly is located below the driving wheel corresponding to the massage head assembly, the head massager further comprises at least one push  
25 component, the push component corresponds to the massage head assembly respectively, the massage head assembly includes a fixing seat of a massage head, soft massage heads, and a spherical head, the fixing seat of the massage head

includes an upper end face facing the driving wheel and a lower end face opposite to the driving wheel, the soft massage heads are embedded in the lower end face of the fixing seat of the massage head, the housing comprises a spherical bowl, the spherical head engages with the spherical bowl by means of a spherical hinge, the push component is driven to rotate around the first rotation axis by the driving wheel corresponding to the push component, the fixing seat of the massage head is driven to rotate around a center of the spherical head by the push component, the driving wheel comprises a lower end face facing the fixing seat of the massage head, the push component is the lower end face of the driving wheel, the upper end face of the fixing seat of the massage head is a slope tilted relative to the first rotation axis, the fixing seat of the massage head is driven to rotate around the center of the spherical head by means of the upper end face of the fixing seat of the massage head applied force by the push component. Furthermore, the lower end face of the driving wheel is a slope tilted relative to the first rotation axis, and the upper end face of the fixing seat of the massage head is a slope tilted reversely to the lower end face of the driving wheel. Furthermore, the upper end face of the fixing seat of the massage head is contacted with the lower end face of the driving wheel.

Furthermore, a plurality of balls are provided between the upper end face of the fixing seat of the massage head and the lower end face of the driving wheel, the balls are arranged on a ball fixing seat, the ball fixing seat and the driving wheel are fixed. Furthermore, the lower end face of the driving wheel is a horizontal surface that is perpendicular to the first rotation axis, the upper end face of the fixing seat of the massage head is a slope tilted relative to the first rotation axis, a plurality of balls are provided between the upper end face of the fixing seat of the massage head and the lower end face of the driving wheel, diameters of all the balls are different from each other. Furthermore, the spherical head is restricted in a bottom

of the spherical bowl by a fixing component. Furthermore, the bottom of the spherical bowl is provided with a through groove penetrating the spherical bowl up and down, the fixing seat of the massage head comprises an extending post protruded upwards, the extending post passes through the through groove and arrives in an inner side of the spherical bowl, the extending post and the spherical head are fixed, the extending post is the fixing component, a sidewall of the bottom of the spherical bowl is bent into an arc shape towards the through groove.

Furthermore, the housing includes a main body, both of a top and a bottom of the main body are open, a top opening is closed by a top cover, a bottom opening is provided with a base, the driving wheel is mounted on the base, the driving wheel is driven to rotate around the first rotation axis relative to the base, and the spherical bowl is provided on the base.

The present invention has the following benefits: The massage head assembly is driven to rotate around the center of the spherical hinge by the push component arranged aslant, which simulates human hands' grasping and kneading operation and improves the massaging comfort degree.

#### **BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS**

Fig. 1 and Fig. 2 are schematic structure views of a head massager of a first embodiment of the present invention in two different angles of view respectively;

Fig. 3 is a schematic structure view of a driving wheel of the first embodiment of the present invention;

Fig. 4 is a schematic structure view of a head massager of a second embodiment of the present invention;

Fig. 5 is a schematic structure view of a head massager of a third embodiment of the present invention; and

Fig. 6 is a schematic structure view of a head massager of a fourth embodiment of the present invention.

## DETAILED DESCRIPTION OF THE INVENTION

The present invention will be explained below in detail with reference to the accompanying drawings and embodiments.

As shown in Fig. 1 to Fig. 3, the head massager shown in the figures is the first embodiment. The head massager includes a housing 1, a power source 2, a drive mechanism 3, at least one driving wheel 4, at least one push component and at least one massage head assembly 6 with soft massage heads 61. The massage head assembly 6 corresponds to the driving wheel 4 and the push component. The power source 2 is fixed in an inner side of the housing 1, the driving wheel 4 is driven to rotate around a first rotation axis A by the power source by means of the drive mechanism 3, the massage head assembly 6 and the housing 1 are connected by means of a spherical hinge, and the massage head assembly 6 corresponding to the driving wheel 4 is driven to rotate around a center of the spherical hinge by the driving wheel 4.

The housing 1 includes a main body 11, both of a top and a bottom of the main body 11 are an opening, the top opening is closed by a top cover 12, the bottom opening is provided with a base 13 used for mounting and supporting the power source 2, the driving wheel 4 and the massage head assembly 6.

The base 13 is provided with spherical bowls 14 which correspond to the driving wheels respectively, a bottom of the spherical bowl 14 is a spherical surface, the driving wheel 4 is disposed around an outer circumference of the spherical bowl 14, the driving wheel 4 can rotate around the first rotation axis A relative to the spherical bowl 14, and the first rotation axis A can pass through a center of the spherical bowl 14 (namely, the center of the spherical surface).

The driving wheel 4 is provided with a lower end face 41 facing the massage head assembly 6, the lower end face 41 is a slope which is tilted relative to the first rotation axis A, that is, there is an angle unequal to  $0^{\circ}$  or  $90^{\circ}$  between the lower

end face 41 and the first rotation axis A.

The massage head assembly 6 includes a fixing seat of a massage head 62, soft  
massage heads 61 and a spherical head 63, the fixing seat of the massage head 62  
includes an upper end face 64 (namely, an upper end face of the whole massage  
5 head assembly 6) facing the driving wheel 4 and a lower end face 65 opposite to  
the driving wheel 4, the upper end face 64 engages with the driving wheel 4, the  
soft massage heads 61 are fixed on the lower end face 65, and the soft massage  
heads 61 are embedded in the lower end face 65 of the fixing seat of the massage  
head 62. A middle part of an upper end face 64 of the fixing seat of the massage  
10 head 62 is protruded upwards to form an extending post 66.

A bottom of the spherical bowl 14 on the base 13 is provided with a through  
groove penetrating the spherical bowl 14 up and down, the extending post 66  
passes through the through groove upwards and arrives in an inner side of the  
spherical bowl 14, the spherical head 63 and the extending post 66 are fixed,  
15 therefore, the spherical head 63 is restricted in the bottom of the spherical bowl 14  
by means of the extending post 66, the spherical head 63 can rotate around the  
center of the spherical bowl 14 in the spherical bowl 14 relative to X axis, Y axis  
and Z axis, but it can't move relative to the X axis, the Y axis or the Z axis. The X  
axis, Y axis and Z axis are perpendicular each another and meet in the center of the  
20 spherical bowl 14.

In this embodiment, a sidewall of the bottom of the spherical bowl 14 is bent  
into an arc shape towards the through groove, so that the spherical head 63 is  
prevented from detaching from the spherical bowl 14.

A plurality of balls 7 are provided between the lower end face 41 of the driving  
25 wheel 4 and the upper end face 64 of the fixing seat of the massage head 62, a  
bottom of each of the plurality of balls 7 is tangent to the upper end face 64, that is,  
both the lower end face 41 and the upper end face 64 are tangent surfaces of each

ball 7. The upper end face 64 of the fixing seat of the massage head 62 can be in parallel with the lower end face 41 of the driving wheel 4. All of the balls 7 are rotatably arranged on a ball fixing seat 5 which is fixed to the driving wheel 4.

5 The power source 2 can be a gear motor, and the drive mechanism 3 can be a gear set. The driving wheel 4 is driven to rotate around the first rotation axis A by the gear motor by means of the gear set, and the massage head assembly 6 is driven to rotate around the center of the spherical hinge by the lower end face 41 of the driving wheel 4 by means of the balls 7.

10 Since the lower end face 41 of the driving wheel 4 is a slope, the massage head assembly 6 can rotate in the space formed by the X axis, Y axis and Z axis in order to simulate human hands to grasp and knead human head. Thus the massaging comfort degree is improved.

15 In this embodiment, the head massager further includes a button 8 and a control circuit board 9, if the button 8 is pressed, the gear motor is started by the control circuit board 9 to thereby grasp the human head.

In this embodiment, the lower end face 41 of the driving wheel 4 is the push component, a force is applied on the upper end face 64 of the massage head assembly 6 by the lower end face 41 of the driving wheel 4 by means of the balls 7, furthermore, the massage head assembly 6 (particularly the soft massage heads 61) is driven to rotate around the center of the spherical bowl 14. The plurality of balls 7 are provided between the driving wheel 4 and the corresponding massage head assembly 6, each of the balls 7 has an equal diameter, the upper end face 64 of the massage head assembly 6 can be a slope and in parallel with the lower end face 41 of the driving wheel 4. It is should be understood that the diameter of each ball 7 can be different, that is, the upper end face 64 of the fixing seat of the massage head 62 is a slope, however, this upper end face 64 can be not parallel to the lower end face 41 of the driving wheel 4.

In this embodiment, the push component is the lower end face 41 of the driving wheel 4, the lower end face 41 is a slope, and the slope rotates around the first rotation axis A. Since the first rotation axis A passes through the lower end face 41, therefore, the rotating trail of the lower end face 41 forms two cones, and vertexes of the two cones are abutted against each other.

In this embodiment, each massage head assembly 6 corresponds to one driving wheel 4 and one push component, there can be one or more massage head assemblies 6, all of the massage head assemblies 6 are driven by the same power source 2, for example, there can be three massage head assemblies 6 which are distributed as a triangle. It should be understood that other number of the massage head assembly 6 is allowable according to ergonomics.

In this embodiment, the drive mechanism 3 can be a gear set, different driving wheels 4 such as gears are driven to rotate by the power source 2 by means of the gear set, each driving wheel 4 rotates around the first rotation axis A of the driving wheel 4 itself, the drive mechanism 3 can be a linkage, a chain transmission mechanism or other mechanism able to drive the driving wheel 4 to rotate.

In this embodiment, the massage head assembly 6 and the housing 1 are connected by means of the spherical hinge, for example, the massage head assembly 6 includes a spherical head 63, the whole surface of the spherical head 63 can be a spherical surface, or part of the surface of the spherical head 63 can be a spherical surface, the housing 1 includes a spherical bowl 14 correspondingly, the whole surface of the spherical bowl 14 can be a spherical surface, or part of the surface of the spherical bowl 14 can be a spherical surface, and an engaging surface of the spherical head 63 and the spherical bowl 14 is a spherical surface. It should be understood that the massage head assembly 6 also can include a spherical bowl 14, and the housing 1 can include a spherical head 63 correspondingly.

As shown in Fig. 4, the head massager shown in the figures is the second

embodiment. In the second embodiment, the lower end face 41 of the driving wheel 4 is a push component. The difference between the first and second embodiments is that the lower end face 41 of the driving wheel 4 is a horizontal surface and diameters of the balls 7 are different from each other.

5 In this embodiment, the lower end face 41 of the driving wheel 4 is a horizontal surface, namely, the lower end face 41 is perpendicular to the first rotation axis A, the diameters of the balls 7 are different from each other, tops of all the balls 7 are tangent to the lower end face 41 of the driving wheel 4, bottoms of all the balls 7 are tangent to the upper end face 64 of the massage head assembly 6,  
10 that is, both of the lower end face 41 and the upper end face 64 are common tangent planes of all the balls 7. The bottoms of all the balls 7 share one tangent plane which is a slope, that is, an upper surface 64 of the fixing seat of the massage head 62 is a slope. The angle between the slope and the first rotation axis A of the driving wheel 4 is not  $0^{\circ}$  or  $90^{\circ}$ .

15 All of the balls 7 are rotatably arranged on the ball fixing seat 5, and the ball fixing seat 5 is fixed on the driving wheel 4.

As shown in Fig. 5, the head massager shown in the figures is the third embodiment. In the third embodiment, the lower end face 41 of the driving wheel 4 is a push component. Comparing with the first and second embodiments, the third  
20 embodiment has the following main features: the lower end face 41 of the driving wheel 4 is a slope, the upper end face 64 of the massage head assembly 6 is a slope, the lower end face 41 contacts with the upper end face 64, that is, the massage head assembly 6 is directly driven to rotate around the center of the spherical hinge by the lower end face 41 of the driving wheel 4.

25 As shown in Fig. 6, the head massager shown in the figures is the fourth embodiment. The head massager includes a housing, a power source 2, a drive mechanism 3, at least one driving wheel 4, at least one push component 10 and at

least one massage head assembly 6 with soft massage heads 61. The massage head assembly 6 corresponds to the driving wheel 4 and the push component. The power source 2 is fixed in an inner side of the housing, the driving wheel 4 is driven to rotate around a first rotation axis A by the power source 2 by means of the drive mechanism 3, the push component is tilted relative to the first rotation axis A, the push component corresponding to the driving wheel 4 is driven to rotate around the first rotation axis A by the driving wheel 4, the massage head assembly 6 and the housing are connected by means of a spherical hinge, and the massage head assembly 6 corresponding to the driving wheel 4 is driven to rotate around a center of the spherical hinge by the driving wheel 4.

A bottom opening of the housing is provided with a base 13, the driving wheel 4 is mounted on the base 13, the driving wheel 4 can be driven to rotate around the first rotation axis A by the power source 2, the base 13 is provided with a spherical bowl 14 located below the driving wheel 4.

The massage head assembly 6 includes a spherical head 63 corresponding to the spherical bowl 14, the spherical head 63 engages with the spherical bowl 14 so as to form a spherical hinge connection, the spherical head 63 is restricted in the bottom of the spherical bowl 14 by a extending post 66, and the spherical head 63 can rotate around the center of the spherical head 63 relative to X axis, Y axis and Z axis.

The driving wheel 4 defines an eccentric hole 42 penetrating the driving wheel 4 from up and down, the eccentric hole 42 and the first rotation axis A are eccentrically arranged, and the center of the spherical head 63 is located outside the axis of the eccentric hole 42.

A push component 10 is tilted relative to the first rotation axis A, the push component 10 includes a force bearing end 15 located at the top and a force applying end 16 located at the bottom, the force bearing end 15 is engaged in the

eccentric hole 42 of the driving wheel 4, and the force applying end 16 and the spherical head 63 are fixed.

5 The driving wheel 4 is driven to rotate around the first rotation axis A by the power source 2, the push component 10 is driven to rotate around the first rotation axis A by the driving wheel 4, and the massage head assembly 6 is further driven to rotate around the center of the spherical head 63.

In this embodiment, since the center of the spherical head 63 deviates from the center of the axis of the eccentric hole 42, the push component 10 is arranged aslant, and the rotating trail of the push component 10 can form a cone.

10 The present invention has been further detailed in the above descriptions with reference to the preferred embodiments; however, it shall not be construed that implementations of the present invention are only limited to these descriptions. Many simple deductions or replacements may further be made by those of ordinary skill in the art without departing from the conception of the present invention, and  
15 all of the deductions or replacements shall be considered to be covered within the protection scope of the present invention.

## CLAIMS

1. A head massager, comprising a housing, a power source, at least one driving wheel and at least one massage head assembly with soft massage heads, wherein the power source is fixed in an inner of the housing, the driving wheel corresponds to the massage head assembly respectively, the driving wheel is driven to rotate around a first rotation axis by the power source, the massage head assembly is located below the driving wheel corresponding to the massage head assembly, characterized in that the head massager further comprises at least one push component, the push component corresponds to the massage head assembly respectively, the massage head assembly includes a fixing seat of a massage head, soft massage heads, and a spherical head, the fixing seat of the massage head includes an upper end face facing the driving wheel and a lower end face opposite to the driving wheel, the soft massage heads are embedded in the lower end face of the fixing seat of the massage head, the housing comprises a spherical bowl, the spherical head engages with the spherical bowl by means of a spherical hinge, the push component is driven to rotate around the first rotation axis by the driving wheel corresponding to the push component, the fixing seat of the massage head is driven to rotate around a center of the spherical head by the push component, the driving wheel comprises a lower end face facing the fixing seat of the massage head, the push component is the lower end face of the driving wheel, the upper end face of the fixing seat of the massage head is a slope tilted relative to the first rotation axis, the fixing seat of the massage head is driven to rotate around the center of the spherical head by means of the upper end face of the fixing seat of the massage head applied force by the push component.

2. The head massager of Claim 1, characterized in that the lower end face of the driving wheel is a slope tilted relative to the first rotation axis, and that the upper end face of the fixing seat of the massage head is a slope tilted reversely to

the lower end face of the driving wheel.

3. The head massager of Claim 2, characterized in that the upper end face of the fixing seat of the massage head is contacted with the lower end face of the driving wheel.

5           4. The head massager of Claim 2, characterized in that a plurality of balls are provided between the upper end face of the fixing seat of the massage head and the lower end face of the driving wheel, the balls are arranged on a ball fixing seat, the ball fixing seat and the driving wheel are fixed.

10           5. The head massager of Claim 1, characterized in that the lower end face of the driving wheel is a horizontal surface that is perpendicular to the first rotation axis, the upper end face of the fixing seat of the massage head is a slope tilted relative to the first rotation axis, a plurality of balls are provided between the upper end face of the fixing seat of the massage head and the lower end face of the driving wheel, diameters of all the balls are different from each other.

15

6. The head massager of any of Claim 1 to Claim 5, characterized in that the spherical head is restricted in a bottom of the spherical bowl by a fixing component.

20           7. The head massager of Claim 6, characterized in that the bottom of the spherical bowl is provided with a through groove penetrating the spherical bowl up and down, the fixing seat of the massage head comprises an extending post protruded upwards, the extending post passes through the through groove and arrives in an inner side of the spherical bowl, the extending post and the spherical head are fixed, the extending post is the fixing component, a sidewall of the bottom  
25 of the spherical bowl is bent into an arc shape towards the through groove.

8. The head massager of Claim 6, characterized in that the housing comprises a main body, both of a top and a bottom of the main body are open, a top

opening is closed by a top cover, a bottom opening is provided with a base, the driving wheel is mounted on the base, the driving wheel is driven to rotate around the first rotation axis relative to the base, and the spherical bowl is provided on the base.

5

## ABSTRACT OF THE DISCLOSURE

The present invention provides a head massager, comprising a housing, a power source, at least one driving wheel, at least one massage head assembly with soft massage heads and at least one push component, the power source is fixed in an inner of the housing, the driving wheel corresponds to the massage head assembly respectively, the driving wheel is driven to rotate around a first rotation axis by the power source, the massage head assembly is located below the driving wheel corresponding to the massage head assembly, the push component corresponds to the massage head assembly respectively, the push component is tilted relative to the first rotation axis, the massage head assembly and the housing are connected by a spherical hinge, the push component is driven to rotate around the first rotation axis by the corresponding driving wheel, the massage head assembly is driven to rotate around a center of the spherical hinge by the push component. The massage head assembly is driven to rotate around the center of the spherical hinge by the push component arranged aslant, which simulates human hands' grasping and kneading operation and improves the massaging comfort degree.